MICRO-CHANNEL LONG MOLECULE MANIPULATION SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation in part of U.S. application _____ being a conversion of U. S. Provisional application 60/419,884 filed October 18, 2002, hereby incorporated by reference,

which is a continuation in part of U. S. patent No. 6,610,256 filed Sept. 24, 2001,

which is a continuation of U.S. patent No. 6,294,136, filed May 13, 1997,

which is a continuation of U.S. patent No. 5,720,928, filed Apr. 3, 1995, all hereby incorporated by reference.

Alternatively, this application claims the benefit of U. S. Provisional application 60/419,884 filed October 18, 2002, hereby incorporated by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] This invention was made with United States government support awarded by the following agencies: DOE DE-FGO2-99ER62830 and NIH HG00225.

[0003] The United States has certain rights in this invention.

BACKGROUND OF THE INVENTION

[0004] The present invention relates to methods of manipulating molecules and, in particular, to a fluid transport system useful for straightening, aligning, and fixing long chain polymers such as DNA.

[0005] The analysis of nucleic acid molecules (e.g. DNA) and, in particular, the sequencing of such molecules, may be aided by optical techniques in which long portions of such molecules are straightened and fixed to a substrate for microscopic analysis. The fixed molecule may be analyzed by creating "landmarks" on the molecule by attaching fluorescent markers to specific locations or by cutting it with restriction enzymes to form visible breaks at specific locations. The order and relative separation of the landmarks is preserved because the molecule remains